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SHARING HUNGER AND SHARING FOOD: STAPLE FOOD PROCUREMENT IN LONG-TERM FISHING EXPEDITIONS OF BAKWELE HORTICULTURALISTS IN SOUTHEASTERN CAMEROON

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ABSTRACT Forest-dwelling farmers of the Congo Basin are not always sedentary. Apart from the tradition of enhancing catch effort near sedentary villages, forest farmers have developed a tradition of long-distance expeditions for faunal exploitation. This paper focuses on forest farmers' carbohydrate procurement strategies in response to shortages of agricultural foods during such nomadic phases, with special reference to sharing and exchange between them and hunter-gatherers; it also examines the impacts of the periodic cycle of food abundance and scarcity on people's health and social relationships. Bakwele horticulturalists conduct long-term fishing expeditions to reduce the "hunger for animal protein." However, long-term forest expeditions also make participants suffer from the "hunger for staple foods." Direct observations were made, to clarify the strategies of staple food procurement, on a fishing expedition from January to March 2007. Thoughout the period child participants increased their body weight, which suggests a positive role of fishing expeditions in the improvement of children's nutritional status. When agricultural foods brought from the sedentary village had been consumed, participants employed various means of exchange and sharing to deal with the shortage of carbohydrates. The Bakwele exploited wild yams, a food they avoid eating in villages, on such occasions. Forest foods were exploited and shared beyond normal sociocultural boundaries at fishing camps. In Bakwele long-term fishing camps, shared hunger brought about cooperation rather than conflict between different households and ethnic groups.

Key Words: Forest-dwelling farmers; Fishing expedition; Hunger for carbohydrates; Bakwele; Cameroon.

INTRODUCTION

For a long time, procurement of animal protein has been considered critical for the survival of forest farmers in the humid tropics (Gross, 1975; Sato, 1983; Takeda, 1987; 1990; Pagezy, 1988; Takeda & Sato, 1993; Kimura et al., 2012). Food crops cultivated in humid tropical rainforests (e.g., root crops like cassava, yautia, and plantain) contain low levels of protein as compared to the cereals cultivated in savannah regions. In addition, raising livestock remains at quite a small scale. In particular, raising cattle is not practical in humid environments because of diseases transmitted by tsetse flies. At present, forest farmers of central Africa procure animal foods from the natural environment by hunting, fishing, and gathering. Komatsu (2008) supposed that ancestors of forest farmers had no incentive to adopt cultivation of protein-rich crops or full-scale livestock farming because they had developed foraging techniques in combination with farming

culture in the process of adaptation to the tropical forest environment.

Insufficient animal food intake brings malnutrition, especially for newborns and younger children.(1) Children's poor growth and short stature is commonly observed throughout rural areas of the developing world where the shortage of animal protein intake prevails (FAO/WHO/UNU Expert Consultation, 2007), and this is also the case for forest farmers of central Africa. Recent studies in human nutrition also noted the important role of animal foods for children not only for protein intake but also for the efficient supply of micronutrients such as iron, zinc, and vitamins (Neumann et al., 2002).

In central Africa, previous studies have revealed the biocultural (i.e., ecological and sociological) strategies employed by the farmers to solve this problem. First, a multi-subsistence economy exists that includes hunting and fishing, and hunting techniques that enable intensive exploitation of animals have been developed (for a description of several trapping and fishing techniques, see Takeda, 1996). Second, ecologically symbiotic relationships have been constructed with neighboring populations (hunter-gatherers and fishers) who occupy different niches in rainforest ecosystems to exchange carbohydrates (agricultural foods) for animal protein. The first strategy prevails among farming populations who have spent many generations in the rainforest environment and are well-adapted to it, and who do not have hunter-gatherer or fisher neighbors. Previous studies have described such examples in central Zaïre (currently DR-Congo) (Sato, 1983; Kimura, 1992; Takeda & Sato, 1993; Takeda, 1996). The second strategy is undertaken by farming populations who have started to settle in rainforest environments and who have hunter-gatherer or fisher neighbors as exchange partners (e.g., the Bira and the Lese of the Ituri Forest: Ichikawa, 1986; Terashima, 1986; exchange of different foodstuffs between the various Songola subgroups: Ankei, 1984).

The procurement of available food resources that enable year-round caloric intake also became a hot topic in research on tropical forest-dwelling hunter-gatherers, especially in the context of the "wild yam question" posed by Robert Bailey and Thomas Headland in the late 1980s, which questioned whether a foraging lifestyle independent of agricultural food could succeed in tropical rainforest (Headland, 1987; Bailey et al., 1989). This question shed light on the availability of starch-rich food resources (i.e., carbohydrates) in the environment. The debate is related to the question of the indigeneity of forest hunter-gatherers and their relationships with forest farmers, as well as forest ecology and human diet. From my point of view, the debate also concerns the nature of forest-dwelling farmer food ecology in that it may overlook the importance of carbohydrate procurement, especially when farmers leave their sedentary conditions. It is not only forest hunter-gatherers, but also forest farmers, who often undertake a temporary semi-nomadic lifestyle for the exploitation of various natural resources as hunters (Sato, 1983; Takeda, 1996) or seasonal fishers (Pagezy, 1982).

Thus, this paper focuses on forest farmers' carbohydrate procurement strategies in response to shortages of agricultural foods during such a nomadic phase, with special reference to the sharing and exchange between farmers and with hunter-gatherers. I also examine the impacts of the periodic cycle of food abundance and scarcity on people's health and social relationships. Most descriptions in this

paper are based on my fieldwork among the Bakwele of southeastern Cameroon between 2003 and 2007, when I participated in numerous fishing expeditions organized by the Bakwele.(1)

THE BAKWELE AND TWO TYPES OF HUNGER: *ZAA* AND *ZOO*

The Bakwele are farmers who speak a Bantu language (classified as A-85b in Guthrie, 1967–1971) and live in northeastern Gabon, northwestern Congo, and southeastern Cameroon (Lewis et al., 2013). The Bakwele cultivate plantain banana, cassava, and yautia as primary staple foods (Mengho, 1978). Prepared staple foods can be accompanied with side dishes called *ejaab*, which include protein-rich wild and cultivated vegetables and mushrooms such as *koko* leaves (*Gnetum* spp.), mushrooms (e.g., *Termytomyces* spp.), and young cassava leaves. The most preferred and valued *ejaab*, however, are those with bushmeat or fish, which are not always available. Among the Bakwele, there exist 2 terms to express hunger: *Zaa*, which is used for general hunger, especially for lack of staple foods, and *zoo*, which refers to the hunger for animal protein (Oishi, 2010). A similar notion of distinguishing hunger into two types is also known among other farmers and hunter-gatherers of the Congo Basin (cf., *njala* and *bokaku* among the Bongando, Kimura et al., 2012; *pote* and *pɛnɛ* among the Baka Pygmies, Brisson, 2010).

The Bakwele of southeastern Cameroon had traditionally scattered along the Dja and Ngoko Rivers, a branch of the Congo River system. Before the 1950s, people often moved their settlements in search of good forest to slash-and-burn. Some people continue to create extension farming camps along watercourses up to today. From the late 1950s to the early 1960s, however, they were forced to resettle and concentrate by the newly independent Cameroonian government (Oishi, 2010), and this resulted in larger populations living in sedentary villages. Furthermore, logging operations in the 1970s and 1980s brought considerable socioeconomic changes (i.e., circulation of cash among local people, the cacao growing boom, and greater economic inequality between peoples: see Kitanishi, 2006; Oishi, 2012; Oishi & Hayashi, 2014, in this volume). Populations increased in large sedentary villages, which in turn increased the demand for bushmeat and fish in these villages. Increasing hunting and fishing pressure decreased the availability of animal protein sources (Kimura et al., 2012). Thus, over time hunger came to prevail in sedentary villages. Merchants sell canned foods such as oil sardines, but these are too expensive for local people's daily consumption. As a results, people continuously feel *zoo* and search for bushmeats and fish.

Forest farmers' mode of faunal resource exploitation is more intense in time and space than that of forest hunter-gatherers (Sato, 1983). Forest farmers live in sedentary villages, and they shift their settlements. When they finish exploiting the local environment, they move to another place and the process of concentrated faunal resource exploitation is repeated at the new settlement; Bahuchet (1993) called the exploitation areas that form around sedentary villages "zones of intensive exploitation."

Apart from the tradition of enhancing catch effort, forest farmers also have a

tradition of embarking on long-distance expeditions for faunal exploitation far away from sedentary villages. For example, Sato (1983) reported on an *ifomo* hunting trip among the Boyela of central Zaïre, a semi-nomadic hunting expedition. Such long-distance hunting expeditions are often found in farming societies of the central Congo Basin and seem to play a role in meeting nutrition demands (Sato, 1983).

For the Bakwele, long-term hunting trips are rare today, but people do practice long-distance and long-term fishing expeditions (Oishi, 2010). During the major dry season from late December to March and the minor one in July and August, many Bakwele move along rivers in family and extended family units for fishing expeditions, which usually last from 1 week to 2 months. Such an expedition is called *kpeti-dik* (camp in the forest) or *vacances* (a French word meaning holiday). As *zoo* worsens in the village, participants anxiously await the season of *kpeti-dik*. Those who cannot participate feel much envy and ask their family or friends to bring back gifts of fishes on their return.

A "PARADOX" OF FISHING EXPEDITIONS: THE HUNGER FOR CARBOHYDRATES

The Bakwele employ more than 25 fishing techniques (Oishi, 2006; 2010). Ichthyofauna of the Congo River Basin is extremely rich, with more than 800 species, and there are more than 160 species in the Dja River alone (Daget, 1978). Popular target families include CITHARINIDAE, MORMYRIDAE, CYPRINIDAE, ALESTIDAE, and MALAPTERURIDAE. There are season-specific fishing methods only practiced in the major dry seasons (i.e., digging holes to capture hibernating fishes such as *Protopterus annectens* and *Malapterurus electricus*, and bail fishing) and also year-round methods such as long-lining and the use of gillnets (Oishi, 2006). Water level fluctuation provides various temporary and permanent habitats for fish, not only in mainstreams but also deep within riverine forests (Oishi, 2006; 2010). Fishing activities intensify throughout the dry season after the peak of periodic inundation, because inundation brings fish into the forest for spawning (especially Siluriformes and CYPRINIDAE) and thus offers opportunities to catch them with simple methods that do not require large monetary investment (Brummett et al., 2010; Oishi, 2010). Not only men, but also women and children participate in fishing during this period (Pagezy, 1993; Oishi, 2006).

Thus, Bakwele long-term fishing expeditions often involve most family members, including children and elders, and sometimes even livestock staying at fishing camps. A fishing party can include up to 40 persons. The Bakwele usually use dugout canoes to travel to fishing camps. Dugout canoes are fully loaded with sleeping mats, baskets, cutlasses, clothes, cooking pots, radios, and fishing materials, with the largest cargo being agricultural foods (Fig. 1). For example, in January 2007, a Bakwele family of 16 persons carried 23 bunches (306 kg) of plantain banana (*koor*), approximately 200 kg of fresh sweet cassava tubers (*pita*), and 20 kg of fresh sweet potato (*mebuta*) for their 2-week fishing expedition. In addition to these fresh starchy agricultural foods, approximately 60 kg of smoked

Fig. 1. A dugout canoe in the Dja River carrying people and foods to a fishing camp.

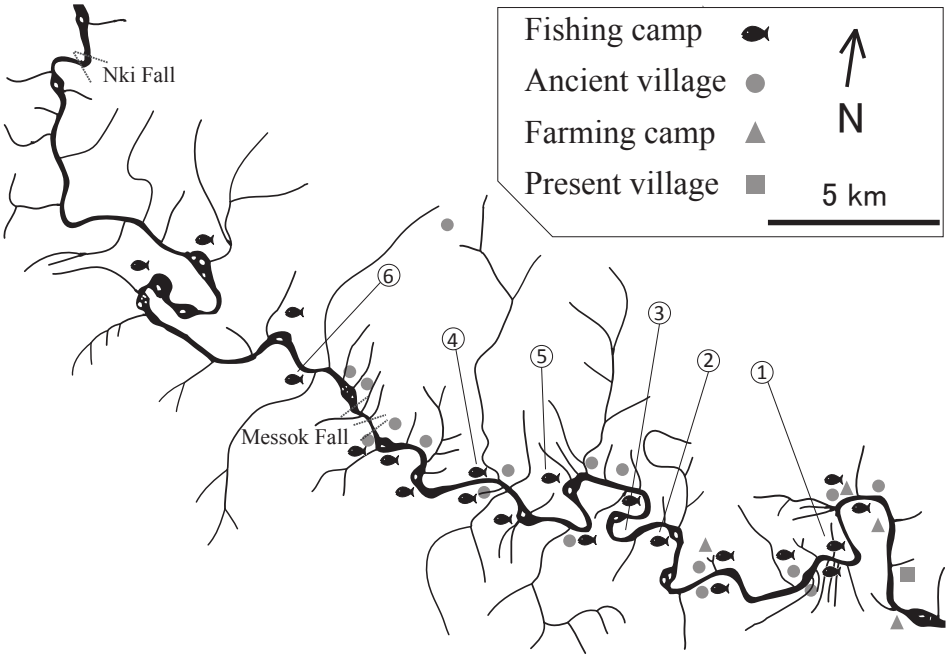


Fig. 2. Distribution of fishing camps along the Dja River.

fermented bitter cassava (*ngata*) and smoked sliced plantain banana (*mekuta*) were also brought to the fishing camp.

There were 21 fishing camps and 4 extension farming camps along the Dja River (Fig. 2). Fishing camps are often located beside ancient villages where remaining cultivated plants (i.e., peppers, oil palms, and fruit trees) are available. To understand fishing camp movements, the course of camp movements by a Bakwele family is also given (Fig. 2). Bakwele adult male MBR was in his early 30s. MBR's party consisted of 7 participants; his wife, 3 children, and his parents in law, and himself. The party's itinerary was as follows.

January 12: Departure from sedentary village. Moved to camp No. 1.
January 13: Moving from camp No. 1 to No. 2.
January 14: Fishing activities started based at camp No. 2. MBR's wife and children visited to seasonal ponds around an island located at No. 3 to practice bail fishing and sinking hooks. They catched dwarf crocodiles, Clarid catfishes, tilapias, snakeheads, and *Xenopus* frogs. In the evening MBR caught large sized Clarid catfishes by long-lining and sinking hook in the main watercourse of the Dja.
January 15: MBR's wife and children continued bail fishing around No. 3 to get a lot of Clarid catfishes and *Xenopus* frogs.
January 16: Moving from camp No. 2 to camp No. 4.
January 17: Bail fishing at seasonal ponds around No. 4. A little catch.
January 18: Moving from camp No. 4 to camp No. 5.
January 19: Bail fishing at seasonal ponds around No. 5 to catch a lot of Clarid catfishes, tilapias, and snakeheads.
January 20: No fishing activities to smoke surplus catch of fish.
January 21: Bail fishing at seasonal ponds around No. 5 to catch a lot of juveniles of Clarid catfish.
January 22: No fishing activities to smoke surplus catch of fish.
January 23: MBR and his farther in law practiced long-lining and catched Schilbeid, Bagrid, and Synodontid fishes.
January 24: MBR and his farther in law practiced long-lining and gillnets.

MBR's party first programmed an expedition of 2.5 weeks. But they joined another party at camp No. 5 and continued fishing activities staying at camp No. 6 for another 2 weeks to participate in a collective poison fishing which requires a number of people to participate. It is common that different groups collaborate in fishing practices and share a fishing camp.

Daily activities at fishing camps are very simple. Male adults and elder boys visit nets (*seli*) and fishing traps (*tolo*) every morning and evening. During the daytime, they often explore a large range of water courses for angling (*esee*) or harpooning (*mesoi*). Women and children either go bail fishing (*elwok*) at streams (*mo-dii*) and temporary water pools (*booz*) in the forest or gather nuts, including *Panda oleosa* (*kana*), *Irvingia* spp. (*nyoak*), and other plant foods. Bail fishing is also known as "women's fishing" and is practiced frequently in the dry season.

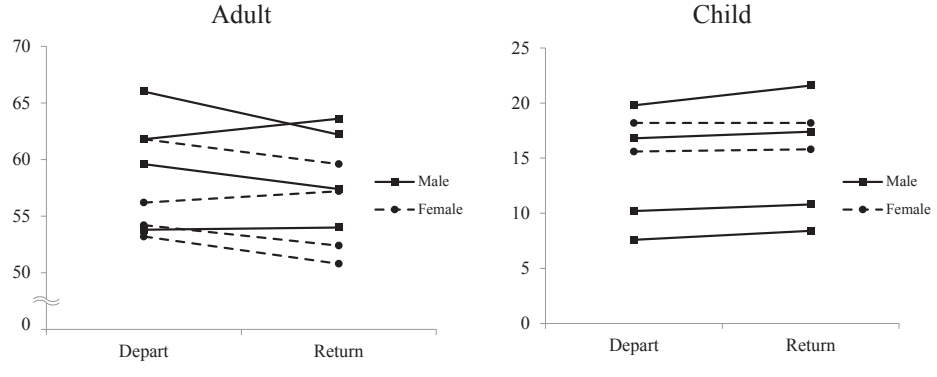
Fig. 3. A Bakwele woman sharing food at a fishing camp.

The participants of *elwok* bring a piece of kindling firewood and half a bunch of plantain banana to cook and eat with fish as a snack after fishing. Small children who cannot participate in these activities rest in camp with an older child.

At fishing camps, meals involving all participants generally occur twice per day: Once in the morning after early morning visits to gillnets and fishing traps, and once in the evening. When there is a catch, the most common dish is steamed plantain banana or cassava with a simply seasoned chili soup full of pieces of fish. Fresh fish are shared between different family units at the camps, although smoked fish are usually regarded as a commodity and are rarely shared. If the camp size is small, all the households eat together by sex groups. In large fishing camps, meals are shared within each household unit, but there are frequent exchanges of dishes after the preparation (Fig. 3).

In addition to the 2 meals, children eat during the daytime at fishing camps. They prepare food by themselves, without the help of adults (Fig. 4). They eat more frequently at fishing camps (4.6 times per day, on average) than at sedentary villages (3.4 times per day). One expedition took place from 19 January to 2 March, 2007 (43 days). I participated in the first half of the expedition and measured body weights of the participants every morning before food intake. Initially, 26 people participated in the expedition, but membership changed several times. For the 14 people who participated in the entire expedition, I also measured body weights upon their return to the village before they took the first meal. The body weights between the time of departure and return were compared. Child participants increased their weight during the fishing expedition, whereas

Fig. 4. Food preparation and sharing by children at a fishing camp.



	Average body weight (kg)*			
Age class	Departure (*A*)	Return (*B*)	*B* – *A*	*t*-Test**
Adult (N = 8)***	58.3 (53.2, 66.0)	57.2 (50.8, 63.6)	-1.2 (-3.8, 1.8)	ns
Child (N = 6)****	14.7 (7.6, 19.8)	15.4 (8.4, 21.6)	0.7 (0, 1.8)	$P < 0.05$

* Ranges are shown in parentheses.
** Paired 2-sample t-test.
*** 4 males and 4 females.
**** 4 males and 2 females.

Fig. 5. Change in body weights before and after the fishing expedition.
14 people participated in the whole period (1.5 months) of observed fishing camp. Their body weights are compared between the time of departure (19 January 2007) and the time of return (2 March 2007).

there was no significant change for adult participants (Fig 5).

This suggests a positive role of fishing expeditions in the improvement of children's nutritional status during the major dry season. Bakwele parents said that a stay in the forest eating fish is good for maintaining family members' health, especially for small children. In addition to providing animal protein, the forest environment is quiet and far from sociopolitical quarrels in the village (Oishi, 2010).

Kpeti-dik (long-term fishing expedition) is conducted in order to reduce *zoo*, the hunger for animal protein, among the participants. However, paradoxically, the long-term expeditions in the forest often make participants suffer from *zaa*. They can eat so much fish that they become "tired" of it, but at the same time, they must economize their consumption of agricultural foods at the camps. Even though they use large dugout canoes for transportation, they have a limited capacity to carry agricultural food from villages to remote fishing camps. Particularly when fishing goes well, agricultural foods are consumed sooner because people cannot eat only fish without starchy food; that is, the consumption of animal protein facilitates the consumption of starchy foods.

MULTIPLE STRATEGIES TO TREAT *ZAA* IN THE FOREST

Bakwele families changed their strategies to acquire adequate carbohydrates depending on the distance from their sedentary village and other extension farming camps where agricultural foods are available in exchange for fish.

Up to 15 km from a village, they transported agricultural foods in dugout canoes from the home village to fishing camps. Such a trip does not take a long time: From less than 1–1.5 days for a round trip. Fresh tubers and fruits are heavy and include inedible peels, so the Bakwele have developed several techniques for preserving carbohydrate foods, such as smoking banana and drying fermented cassava. These preserved foods weigh little, consist only of edible parts, are more water-resistant, and can last longer than fresh agricultural foods.

When the fishing camps were between 15 and 30 km from the home village, it became more difficult to transport agricultural foods quickly. People also sought extension farming camps and exchanged fresh and dried fish for plantain and cassava. This exchange is advantageous for the owner of the extension farming camp, because he can get a good amount of fish at an advantageous rate as long as he has plantain or cassava to trade. If it is difficult to find such a camp, fishers visited other people's fishing camps to ask them to share or exchange for agricultural foods. If there are abandoned crop fields, which often exist close to ancient villages recently abandoned by Bakwele ancestors, people go to the fields to seek agricultural foods. Ancient abandoned villages are called *guur*, and people can find many stands of semi-domesticated oil palm from which they can exploit palm oil and wine.

When a fishing camp was too far from a sedentary village and any extension farming camps to carry agricultural food, people tried to visit nearby Baka hunter-gatherers' camps to exchange fish for wild yams (*bwal*; *Dioscorea prae-*

Fig. 6. A Bakwele boy carrying fresh wild yam tubers.

hensilis Benth., DIOSCOREACEAE) dug by Baka women. If they could not find Baka camps, they would start to dig wild yams by themselves. The Bakwele fishermen know small hill slopes near the river where they can expect to find wild yam tubers (Fig. 6). The Bakwele do not eat wild yam tubers in sedentary villages because they regard them as an "animal's food." But they did not hesitate to eat wild yams in the forest. They even appreciated the soft texture and sweet taste, which differs from that of cassava tubers (Oishi, 2010).

In these food exchanges, no social conflicts or quarrels concerning food were observed. Different food items were not shared in the same way. Fresh fish was shared by the organizer of the expedition, who usually has more fishing materials, with the others. Cooked meals were shared mutually between household groups. When agricultural foods were finished, wild yams gathered by all participants were shared to satisfy all participants' needs.

DISCUSSION

Forest-dwelling farmers of the Congo Basin are not always sedentary. Referring to the Boyela's *ifomo* long-distance hunting trips, Sato (1983) noted that the problem of animal protein procurement restrains shifting cultivators from remaining sedentary and facilitates immigration to new environments. Because forest farmers are dependent on agricultural production in sedentary villages and faunal resources that are abundant in less-exploited natural environments, maintaining the balance

between the two types of hunger—the hunger for carbohydrates and the hunger for animal protein—is essential for the integration of these different livelihood components.

Pagezy (1982) reported "seasonal hunger" among the Oto and the Twa of the Lake Tumba region. Seasonal hunger influenced people's body weights differently according to their mode of subsistence. Seasonal fishermen lost their weight in the period of seasonal hunger, but they recovered the weight quickly after arriving at fishing camps (Pagezy, 1982). In the Bakwele fishing expedition I observed in 2007, those who ate most frequently in fishing camp were the children, and they successfully maintained their body weight during the 2 months. This observation suggests the importance of fishing expeditions in the food security of Bakwele children, which is parallel to Pagezy's (1993) observation of Oto children's practice of small-scale fishing in the flooded forest near Lake Tumba.

In the Bakwele long-term fishing expeditions, the stable acquisition of carbohydrates or other energy sources required great effort. The Bakwele have employed various ways of exploitation, exchange, and sharing to treat the hunger for carbohydrates. It is noteworthy that all such tactics depended on the social relationship with others, including other Bakwele households, Baka hunter-gatherers, and their ancestors. In the forest the Bakwele exploited wild yams, a food they avoid eating in their villages, and they exchanged and shared these with hunter-gatherers. Forest food was shared beyond sociocultural boundaries. Likewise, Terashima (1998) reported that Lese farmers enjoyed peaceful interactions and honey at the forest camps of their hunter-gatherer neighbors, the Efe, in the Ituri forest of Zaïre. The forest world offers temporary refuges to farming populations both nutritionally and sociologically, such that the forest world and village world complement one another (Terashima, 1998). The Bobanda of the northeastern part of the Congo-Brazzaville also practice seasonal fishing trips with their partners, the Aka hunter-gatherers (Hanawa, 2004). The Bobanda and Aka have a confrontational relationship in the villages, but both share the social space of fishing camps in a "family-like" atmosphere (Hanawa, 2004). Not only did life in forest camps change the mode of social interactions of the Bakwele (Oishi, 2010), but the hunger for carbohydrates even changed the Bakwele's cultural perception of food and modes of sharing food. The *zaa* caused the Bakwele to cross sociocultural boundaries.

Although hunger may bring about competition and conflicts, shared hunger brought about cooperation between different households and ethnic groups at Bakwele long-term fishing camps. Within a small-scale foraging group, like those at Bakwele fishing camps, people chose to cooperate rather than compete. It has been repeatedly noted that food sharing is an invaluably important component of human social life, whereas the importance of sharing hunger is often overlooked. Sharing hunger is the other side of sharing food, and it is an important experience that teaches how we can share natural resources and positive social interactions with neighbors.

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NOTES

(1) In this paper, I use the term child to refer to an individual less than 10 years old.
(2) Participatory observation around Nki National Park took place between December 2006 and May 2007 under the research permission from the Ministry of Forestry and Wildlife of Cameroon government.

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